

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-10, 12-32 and 34-36 are presently active in this case. Claim 9 has been amended to include all of limitations of Claim 11 and further make the subject matter more clearly distinguishable over the cited references without adding new matter. Claim 31 has been rewritten in independent form including all of the limitations of Claims 9 and 33, and amended to make the subject matter more clearly distinguishable over the cited references without adding new matter. Claims 13, 14 and 32 have been amended to be dependent on Claim 31. Claims 11 and 33 have been cancelled. Claim 38 has been newly added without introducing any new matter.

In the outstanding Office Action, the Examiner objected the specification for informalities; rejected Claims 12 and 33 under 35 U.S.C. § 112, second paragraph; rejected Claims 9, 10, 15 and 31 under 35 U.S.C. § 102(e) as being anticipated by O'Donnell et al. (U.S. 2005/015,0866); rejected Claims 11-13 under 35 U.S.C. § 103(a) as being unpatentable over O'Donnell et al. in view of Fakuda et al. (U.S. 2003/0113479) and George et al. (U.S. 4,357,387); rejected Claim 14 under 35 U.S.C. § 103(a) as being unpatentable over O'Donnell et al. in view of Fakuda et al. and George et al. and further in view of Panitz et al. (U.S. 5,925,228); rejected Claim 32 under 35 U.S.C. § 103(a) as being unpatentable over O'Donnell et al. in view of Horita et al. (U.S. 5,8925278); and provisionally rejected Claims 9-14 on the ground of nonstatutory obviousness-type double patenting over claims 5, 17-22 of co-pending Application No. 10/773,245 (Sasaki et al.).

With regard to the objection to the specification, the specification has been amended to add elements which are capable of being used in the sealing treatment. The elements were

inadvertently omitted from the original specification. However, since the elements are set forth in page 27, lines 9-12 and Claim 7, no new matter has been entered.

With regard to the rejection under 35 U.S.C. § 112, the term “silicon” in Claim 33 is a miswriting of “silicone”, which means a silicone resin. Therefore, Applicants have amended “silicon” as “silicone” in Claim 31, which includes the limitations of original Claim 33.

Regarding the provisional rejection on the ground of nonstatutory obviousness-type double patenting, since this rejection is a provisional one, applicants do not wish to traverse the double patenting rejection at this time. Instead, Applicants plan to traverse such rejection during prosecution of the 10/773,245 application that served as the basis for double patenting.

Before turning to the merits of this case, Applicants note that M.P.E.P. § 2143 states that to establish a *prima facie* case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the references teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references (or references when combined) must teach or suggest all the claim limitations.<sup>1</sup> The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure.<sup>2</sup> Applicants respectfully submit that a *prima facie* case of obviousness cannot be made for the claims as amended herein.

Turning now to the merits Applicants’ invention is directed to an internal member of a plasma processing vessel for use in a plasma processing using a gas including a halogen element. A conventional internal member can include a thermally sprayed film on a base

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<sup>1</sup> Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F2d 981,180 USPQ 580 (CCPA 1974).“All words in a Claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F2d 1382, 1385, 165 USPQ 494,496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F2d 1071, 5 USPQ2d 1596(Fed. Cir. 1998).

<sup>2</sup> *In re Vaeck*, 947 F2d 488,20 USPQ2d 1438(Fed. Cir. 1991).

material to improve plasma resistivity. However, the sprayed film of these conventional internal members can peel and release from the internal member to contaminate the process chamber. The present inventors have determined the source of this problem and developed the present invention to minimize such problem.

Specifically, as discussed in Applicants' specification, since a reaction byproduct is attached to the internal member during plasma processing, the internal member should be cleaned by a cleaning fluid. During cleaning, a processing gas and/or cleaning fluid may permeate into space between a base material and the thermally sprayed film to thereby generate a corrosion byproduct on the surface of the base material by reaction of the gas and the cleaning fluid, resulting in the peeling off of the thermally sprayed film. Based on this recognition, the present inventors discovered that at least parts of pores inside the thermally sprayed film can be sealed by a resin in order to suppress peeling off of a thermally sprayed film. Thus, Applicants' independent Claims 9 and 31 have now been amended to require this feature.

In contrast O'Donnell discloses an apparatus which includes a focus ring having thermal sprayed yttria-containing coating thereon (see abstract). Fukuda is directed to an atmospheric plasma treatment apparatus. Fukuda discloses that a sealing treatment is preferably carried out to reduce the void volume of a thermally sprayed ceramics (see paragraph [80]). As acknowledged by the Office Action, O'Donnell in view of Fukuda does not teach sealing of barrier coat layer with resin. The Office Action asserts that since George teaches sealing of thermally sprayed refractory (includes ceramic) coating using resins to improve surface abrasion and durability of coatings, it would be obvious to one of ordinary skill in the art to seal the barrier coat using resin as taught by Fukuda and George in the apparatus of O'Donnell to reduce void volume of barrier coating and improve surface abrasion and durability. Applicants respectfully disagree.

George is directed to refractory coated fabric compositions being used as protective mats for a welding operation, furnace linings and fire-resistant linings (col. 1, lines 32-36). The refractory coated fabric compositions include a refractory coating which is formed by a plasma spraying technique (abstract). George specifically discloses that a polymeric coating may be applied over the refractory coating to improve the surface abrasion quality (col. 7, lines 10-21). Further, the polymeric coating is formed on **the outer surface** of the refractory coating and has an abrasion resistant quality (Claims 5 and 8).

Thus, George is related to refractory coated fabric compositions being used as protective mats for welding operation, furnace linings and fire-resistant linings. The compositions of George usually serve as electrical insulating tape, welding curtains, mats, pipe and dust insulation, fire resistant lining and so on, which require properties of enduring high temperatures and providing thermal protection (see col. 7, lines 58-64). In contrast, O'Donnell is related to an internal member of a semiconductor processing apparatus and Fukuda is related to a plasma processing apparatus. Therefore, George is included in a totally different technical field from those of O'Donnell and Fukuda. Further, there is no motivation to combine George with O'Donnell and Fukuda. As a result, the combination of George with O'Donnell and Fukuda is not obvious to one of ordinary skill in the art.

Furthermore, even assuming, *arguendo*, that such combination were proper, such combination still cannot render the present invention obvious. In the present invention, the resin seals parts of pores **inside** the thermally sprayed film. The sealing treatment reduces a processing gas and a cleaning fluid that permeates through the pores into space between the base material and the thermally sprayed film, thereby reducing peeling off of the thermally sprayed film. Although Fukuda discloses that a sealing treatment is carried out on a thermally sprayed film, Fukuda fails to disclose that the sealing treatment is performed by using a resin. In addition, George merely discloses that a polymer coating (corresponding to

the resin of the present invention) is formed **on the outer surface** of a refractory coating, not sealing the pores generated in the refractory coating. Therefore, the cited references are totally silent about the resin sealing the pores in at least a portion of a thermally sprayed film. As a result, the combination of O'Donnell, Fukuda and George cannot teach all limitations of Claim 9, as required to make a *prima facie* case.

Regarding Claim 31, the invention of this claim further includes an anodic oxidized film between the base material and the thermally sprayed film. Further, pores in the anodic oxidized film are sealed by a polymer resin. The Office Action admits that O'Donnell does not teach that the anodic oxidized film is sealed by a polymer resin, but asserts that since Watanabe discloses an anodized layer 33 followed by a polymer resin based coating 47, the present invention is obviously taught by the combination of Watanabe and O'Donnell.

Similar to Claim 9 discussed above, the invention in accordance with Claim 31 recites that what is sealed by a polymer resin are parts of pores inside the anodic oxidized film. Since the polymer resin seals the pores, not forming an additional layer between the anodic oxidized layer and the thermally sprayed film, the anodic oxidized layer is directly attached to the thermally sprayed film. In contrast, Watanabe merely discloses that a resin coating is formed as an additional layer between an electrical insulating film 33 (which corresponds to an anodic oxidized film of the present invention) and a heat-dissipating-side electrode 34 (which corresponds to a thermally sprayed film of the present invention) with a thickness (see 47 of Fig. 11). Watanabe specifically discloses that the thickness is preferable a range from 3  $\mu\text{m}$  to 10  $\mu\text{m}$  because the coating thickness smaller than 1  $\mu\text{m}$  results in the formation of pinholes in the resin coating, so that the resin coating cannot exhibit its function to supplement electrical insulation (see col. 11, lines 42-64). In Watanabe, since the additional layer of the resin coating is formed on the anodic oxidized film, the heat-dissipating-side electrode 34 is not directly attached to the electrical insulating film 33. Thus, Watanabe

completely fails to disclose that the pores in the anode oxidized film are sealed by a resin. Therefore, the combination of O'Donnell and Watanabe do not teach all of the limitations of Claim 31 as required to establish a *prima facie* case of obviousness.

Finally, MPEP §2141.02 states,

[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103. (emphasis in original)

As discussed above, Applicants discovered that a processing gas and/or cleaning fluid may permeate into space between a base material and the thermally sprayed film to thereby generate a corrosion byproduct on the surface of the base material by reaction of the gas and the cleaning fluid, resulting in peeling off of the thermally sprayed film. Applicants' original specification emphasizes this source of the peeling problem. However, none of the cited prior art references hint or suggest this problem let alone the source of the problem and solution discovered by Applicants. This provides an additional basis for patentability of Claims 9 and 31.

For the reasons discussed above, independent Claims 9 and 13 patentably define over the cited references. It is also believed that Claims 10, 12 and 15, directly depending on Claim 9, Claims 13, 14, 32 and 38, directly depending on Claim 31, are allowable for the same reasons indicated with respect to Claims 9 and 31, respectively, and further because of the additional features recited therein which, when taken alone and/or in combination with the features recited in Claim 9 and/or 31, remove the invention defined therein further from the disclosures made in the cited references.

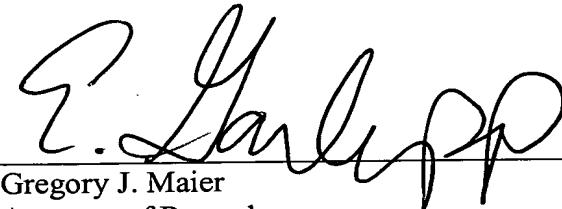
Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as

amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims an/or drawings be further amended or corrected in formal respects, in order to place the case in condition for final allowance, then it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case be passed to issue. Alternatively, should the Examiner feel that a personal or telephone discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Gregory J. Maier  
Attorney of Record  
Registration No. 25,599

Edwin D. Garlepp  
Registration No. 45,330

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 06/04)

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